NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
Dexter R. Matthews, Director | Division of Waste Management | Michael F. Easley, Governor
William G. Ross Jr., Secretary

December 19, 2008

Mr. Carl Critcher
Washington County Sanitation
P.O. Box 1007
Plymouth, North Carolina 27962

Re: Comments on Permit Application (5-year Permit Review) of Washington County Construction and Demolition Debris Landfill (C&DLF), Washington County, North Carolina
Permit No. 94-04, Document ID No. 6496

Dear Mr. Critcher:

The Division of Waste Management (the Division) has received the above-referenced permit application including:

- *CDLF Permit Renewal, County of Washington, NC.* (A cover letter and a set of three figures) Prepared by: The Wooten Company, Greenville, NC. March 10, 2005. DIN 6500

- *Permit Application, Washington County C&D Landfill (Permit 94-04) Continued Operations*. Prepared by: Richardson Smith Gardner & Associates (RSG), Raleigh, NC. Prepared for: Washington County Public Utilities. June 20, 2008. DIN 4983.

Reviews of compliance with the Solid Waste Management Rule (Rules), 15A NCAC 13B were conducted by the Solid waste Section (SWS), and the following additional information is required:

Permit Amendment (5-year Review) Application (March 2005)

1. Please describe the history and current status of the tire mono-fill which is on the immediately east side of the C&DLF unit. According to the Closure and Post Closure Plan (RSG, 2008), the tire mono-fill will be converted to a C&DLF unit, please provide data to verify if there is sufficient quantity of earthen material from the existing on-site the borrow source to meet the need for cover (weekly and final covers) material.

2. The Item f. of Section 5.0 Solid Waste Management Compliance Data in the approved Construction Plan Report (Diehl & Phillips, P.A., dated August 3, 1995) reported that "a sediment and erosion control plan (the Plan) will be submitted to the North Carolina Division of Land Resources (NCDLR) with the Construction Plans." Has this Plan been approved by the NCDLR? Please provide the NCDLR approved letter and approved Plan as a portion of the permit application document.

3. Please provide the following information, but not limited to:
    - The types of wastes allowed and permitted to accept at the C&DLF facility.

- Average yearly disposal rates in ton and a representative daily rate that is consistent with the Washington County Board of Commissioners.
- The area served by the C&DLF facility.
- Remaining landfill capacity, projected active life of the C&DLF, and 5-year phased development.

4. Please provide the updated operations plan of the C&DLF in accordance with the requirements stated in Rule .0542. A landfill gas control plan or landfill gas management plan (See Comment 22) appended to the Operations Plan must be prepared in accordance with Rule .0544(d).

5. According to the Division's Facility Compliance Audit Report dated May 11, 2007, a pad to store white goods was proposing to construct at the landfill property. Please show the proposed or as-built pad location on the facility drawings.

6. Please describe the operation plan for managing the white goods. The plan may include, but not limited to, prevention from surface water to contact wastes, removal of Freon from white goods, the maximum tonnage will be allowed to store at any time at the facility, the estimated tonnage per month, the contact information of a contractor or recycler to handle, off-site transportation, and/or recycle the white goods, and the frequency or schedule to remove the white goods off-site.

7. According to the Closure and Post Closure Plan (RSG, 2008), the tire mono-fill will be converted to a C&DLF unit; please provide information if the C&DLF facility will accept used tires in the present and future. If does, please provide the operation plan for managing the scrap tires. The staging area needs to be shown on the facility drawing. The plan may include, but not limited to, prevention from surface water to contact wastes, the maximum tonnage will be allowed to store at any time at the facility, the estimated tonnage per month, the contact information of a contractor or recycler to handle, off-site transportation, and/or recycle the white goods, and the frequency or schedule to remove the waste tires off-site.

8. Please describe the operation plan for managing the wood waste processing area (or formally called Washington County Land Cleaning and Inert Debris Area).

9. Comments related to sampling, analysis, and monitoring of groundwater, surface water. The closure and post-closure requirements for C&DLF facilities [Rule .0543 (e)(B)] require the facility to monitor the ground water and surface water in accordance with the requirements of Rules .0544 through .0545 of the Section and maintaining the groundwater monitoring system. Additionally, Monitoring Plans and Requirements for C&DLF facilities [Rule .0544] require that a groundwater monitoring plan and surface water monitoring plan must be submitted, including information on the groundwater monitoring system, sampling and analysis requirements, and detection monitoring requirements that fulfills the requirements of Part (1) (A) through (1) (E) of this section must be submitted.

   The facility therefore, must submit a groundwater and surface water monitoring plan in the revised permit renewal application, including an updated Sampling & Analysis Plan. The NC Solid Waste Section guidelines for groundwater, soil, and surface water sampling may be found at http://www.wastenotnc.org/swhome/enviro_monitoring.asp.

The guidelines are located under the subcategory Environmental Monitoring and include the following pertinent documents:

"Groundwater, Surface Water, and Soil Sampling for Landfills"
"Leachate Sampling and Analysis"
"Solid Waste Environmental Monitoring Data Form"
"Electronic Data Deliverable (EDD) Template"
"October 2007 Memo"
"October 2006 Memo"
"Addendum to October 2006 Memo"

Please note that the above documents provide guidance primarily for sampling and analysis of groundwater and surface water samples.

10. The *Spring 2008 Groundwater Monitoring Report for the Washington County C&D Landfill* reported that survey data for the groundwater monitoring wells was unavailable. In order to accurately determine groundwater elevations for each monitoring well, the wells must be surveyed by a NC Registered Land Surveyor. Please provide the well survey data in accordance with Rule .544(b)(1)(F). Additionally, the survey data must be incorporated into the next semiannual groundwater monitoring report with an evaluation of potentiometric surface and groundwater flow direction.

Attachment B - Closure Plan (RSG, June 2008)

11. (Section 1.3 & CQA in Attachment A) The Rule .0543(c)(1) requires the cap having" a permeability less than or equal soils underlying the landfill, or the permeability specified for the final cover in the effective permit, or a permeability no greater than 1.0×10^{-5} cm/sec, **whichever is less**." The permeability of a foundation soil underneath the C&DLF was tested and reported in the "*Site Application Report for Proposed Construction and Demolition Waste Landfill and Tire Monofill for County of Washington*" dated October 31, 1994 and approved by the Division on February 17, 1995. The foundation soil - upper clay, (UD #1) in Table 7 and Section 5.8.2 of the above-referenced Application was reported having a permeability of 5.0×10^{-6} cm/sec; therefore, the permeability of any liner material of the proposed final cover for the C&DLF shall be less than or equal to 5.0×10^{-6} cm/sec. Please revise the liner criterion in the Closure Plan (including Close Estimate) and CQA Plan in Attachment A.

12. (Section 1.3) Please provide the slope stability analysis data (including the veneer slope stability and global stability) to support the final cap design. And the soil engineering properties including shear strength, density, internal friction angle used for designing the final soil cover system must be considered as the minimum criteria to select the earthen or synthetic material and be field tested in according to the requirements specified in the Construction Quality Control and Quality Assurance (CQA) Plan.

13. (Section 1.3, Table 3.1, & CQA in Attachment A) Will there be an intermediate soil cover to be placed, compacted, and graded for surface flow over the C&D wastes prior to install the final cap system? Is the costs of $7,000 for "surface preparation" (See Table 3.1 – Closure Cost Estimate) used for the construction of intermediate soil cover? If so please provide the specification for the construction of the intermediate soil cover and make necessary correction to the details of "Final Cover System" on Figure 3. Please clarify.

14. (Section 1.5.2, the last sentence on Page 1.0-3) The Closure Plan proposes to use sediment removed from surface water system as daily or intermediate cover. The question is how the removed sediment can be disposed of at the closed landfill. Please clarify.

15. (Section 1.6) Please add the closure notification requirements in accordance with Rule .0543(c)(4) to the proposed Closure Plan.

16. (Section 1.7) Please describe (i) where to record a notation on the deed and (ii) the requirement of informing the Division upon completion of placing notation on of deed of landfill facility property.

17. (Table 3-1) Is there a "shrinkage factor" used to calculate the quantity of soil cap system components? What is the assumption of the soil sources - from the on-site or off-site borrow sources? Please clarify.

18. (Table 3-1) What are the temporary and permanent erosion controls to be constructed during the period of site closure? Please provide an Erosion and Sediment Control Plan and detailed drawings related to the closure activities.

Attachment C - Post-Closure Plan (RSG, June 2008)

19. (Section 2.4) Please add maintenance requirements for the access road to all monitoring points. The costs for road maintenance need to include in the cost estimate Table 3.2.

20. (Section 2.4.2) Please describe the requirements for mowing, re-vegetation, and fertilization (See cost items in Table 3.2) to encourage the growth and establish healthy vegetation on the final cover during the post-closure period.

21. (Section 2.4.5) Please provide the "current" Landfill Gas Management Plan, which is not available in 2005 permit application document.

22. (Table 3.2 – Post-Closure Cost Estimate) Please verify the quantity for groundwater/ surface water monitoring & reporting. Four wells will be sampled semi-annually; therefore, the "quantity" shall be eight (8).

Attachment A - CQA Plan and Specification (RSG, June 2008)

23. Please add specifications for construction of intermediated soil cover [or Subgrade preparation for soil liner – (Section 02250, item D.4.)], erosion and sediment control, re-vegetation, and passive gas vent.

24. (Section 02250) Item C.2. describes the specifications for the off-site borrow sources only; what about the on-site borrow sources? The Division believes the proposed soil liner specification needs to be applicable to both on-site and off-site borrow sources. Please clarify.

25. (Section 02250, Tables 1 & 2) (See Comment 11) Please revise the criterion of hydraulic conductivity of soil liner to 5.0×10^{-6} cm/sec.

26. (Section 02250, Table 2) Based on the experiences from waste industry, the maximum lift thickness in a loose condition is 9 inches, and the maximum lift thickness in final compacted condition is 6-inches. The proposed maximum lift thickness (compacted) is not acceptable. Please revise the criterion accordingly.

27. (Section 02250, Table 2) Please add the minimum values of soil density and friction angle and shear strength of soil liner to the specification (See Comment 13). Please also add test frequency (Number of test per lift per acre) to Table 2. This comment is also applicable to the specification for Subgrade for soil liner.

28. (Section 02258) Please add the minimum values of soil density and friction angle and shear strength of vegetative soil layer to the specification the item D. (See Comment 13). The testing methods and frequencies needs to be specified in Section 02258 as well.

29. The CQA Plan for constructing final cover must be prepared in accordance with Rule .0541. Please provide the revised CQA Manual/Plan.

30. (Soil Liner CQA, Section 5.0 - Item G) The last sentence (on page 3) indicated that geo-synthetics will be laid over the finished soil liner which is different from the proposed final soil cover system. Please clarify.

31. (Table 3) The proposed CQA testing frequency for hydraulic conductivity (ASTM D 5084) of soil liner is 80,000 square feet per lift. This proposed testing frequency is less than the waste industry standard of 1 test per lift per acre. Please explain why the proposed testing frequency is sufficient and adequate enough to ensure the quality of the final soil cap system exceeding or equivalent to the requirements specified in the CQA plan.

The Division appreciates your efforts and cooperation in this matter. If you have any questions or would like to schedule a meeting to discuss this matter further, please contact Ming-Tai Chao at (919) 508- 8507 or Christine Ritter at (919) 508-8506.

Sincerely,

Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section

Christine Ritter
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cc: Pieter K. Scheer, P.E., RSG
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